

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of the Petition of
Union Oil Company, Los Angeles
Refinery, for Review of Order
No. 75-51 (NPDES Permit No. CA0000035)
of the California Regional Water
Quality Control Board, Los Angeles
Region. Our File No. A-113.

Order No. WQ 77-23

BY THE BOARD:

On April 21, 1975, the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) issued Order No. 75-51 (NPDES Permit No. CA 0000035), providing waste discharge requirements for Union Oil Company of California at its Los Angeles Refinery, Wilmington Beach. The company was operating under prior waste discharge requirements adopted May 19, 1965. The Union Oil Company (Petitioner) filed a petition with the State Water Resources Control Board (State Board) on May 19, 1975, seeking review of Order No. 75-51. On November 6, 1975, the petitioner was advised that its petition would be evaluated on the basis of the record of the Regional Board, and the petitioner was invited to submit additional materials or argument pertaining to the petition and on November 24, 1975, the petitioner submitted additional argument and material.

I. Background

The petitioner owns and operates a refinery located at Wilmington, California, producing refined petroleum products

from crude oil. The refinery discharges up to 46.15 million gallons per day of wastewater from three discharge points, designated as 001-002 and 003, to West Basin, Los Angeles Inner Harbor. At the time the Regional Board Order was adopted, the discharge consisted of production wastewater, treated ballast water, boiler blowdown and cooling waters and other industrial wastes.

From Discharge Serial No. 001 up to 4.32 mgd of process water, cooling tower bleed-off, washdown wastes, and boiler blowdown could be discharged under normal conditions, as described below. Under an emergency situation, Union Oil has the capability to discharge 8.64 mgd of wastewater from this point. The wastes flow to West Basin near Berth 131, through a 54-inch diameter outfall pipe, and a diffuser system which is approximately 10 feet below the water at Latitude $33^{\circ}46'05''$, Longitude $118^{\circ}16'45''$. Prior to discharge to West Basin, the wastewater collects in two retention sumps with a combined capacity of 24 million gallons, and is treated by an API separator, pH control, and flocculation followed by dissolved air flotation.

Discharge Serial No. 002 contains up to 36.0 mgd of single-pass, non-contact, saltwater cooling water. The discharge occurs to West Basin near Berth 124, through a 56-inch diameter outfall pipe, at an approximate depth of 12 feet below the water surface at Latitude $33^{\circ}45'40''$, Longitude $118^{\circ}16'35''$. There is a surge sump on the exit line of the system. A

hydrocarbon sensing alarm is attached to this sump. At times chlorine is applied at the saltwater intake line for control of biological growths.

Discharge Serial No. 003 contains up to 1.512 mgd of ballast water and storm water from ships and tanks and the tank farm enclosure. This discharge occurs to the West Basin near Berth 148, at Latitude $33^{\circ}45'20''$, Longitude $118^{\circ}16'20''$. The ballast water and storm water is stored in tanks for gravity separation of oils and is then passed through a Wemco air flotation unit and observation basin for final skimming prior to discharge. This flow is intermittent.

Discharge Serial No. 001 is normally sewerred and only discharges to navigable waters when rainfall exceeds the total storage capacity of the retention sumps, and when the flow rate limitation contained in Union's sewer use permit from County Sanitation Districts of Los Angeles County of 3,000 gallons per minute (gpm) per 24 hours is exceeded. If there is sufficient storm water and if Union Oil has an emergency situation whereby they would be unable to discharge to the sewer, the maximum flow rate to navigable waters could be as high as 6,000 gpm (8.64 mgd). Their average dry-weather discharge rate to the sewer is 2,400 gpm (3.45 mgd) of which 68 percent is process water (2.35 mgd). From January 1971 to October 11, 1974, the maximum discharge to navigable waters was 2,000 gpm (2.88 mgd). The discharge to navigable waters occurred on an average of five days per year during the same period.

The discharge requirements adopted by the Regional Board implement the Water Quality Control Policy for enclosed bays and estuaries, enacted by the State Board (Los Angeles Inner Harbor is defined as an enclosed bay in the Policy), the Water Quality Control Plan for the Los Angeles River Basin and requirements of the Ocean Plan.

Regional Board Order No. 75-51 as adopted contains, among other things, the following prohibitions and effluent limitations for the discharges:

A. Discharge Prohibition

The discharge of the industrial process wastes contained in Discharge Serial No. 001 by Union Oil Company of California at this location to navigable waters on or after July 1, 1977, is prohibited.

B. Effluent Limitations

1. Wastes discharged prior to July 1, 1977, shall be limited to mixtures of industrial process wastes and storm runoff; cooling tower bleed-off; boiler blowdown; single-pass, non-contact cooling water; washdown water; ballast water; and storm runoff, as proposed. On or after July 1, 1977, industrial process wastes will not be discharged, as indicated above.
2. The discharge of any effluent in excess of the following limits is prohibited:

<u>Discharge 001:</u> <u>Constituent</u>	<u>Discharge Rate</u>		<u>Concentration</u>	
	<u>(lbs/day)^{1/}</u>		<u>Limit</u>	
	<u>Maximum</u> <u>Daily</u>	<u>30-day</u> <u>Average</u>	<u>(mg/l)</u> <u>Average</u>	<u>Maximum</u>
Suspended solids ^{2/}	5,400	3,600	50	75
Settleable solids ^{2/}	-----	-----	0.1 ^{3/}	0.2 ^{3/}
BOD ₅ 20°C	2,160	1,440	20	30
Oil and Grease	1,080	721	10	15
Phenols	14.4	7.2	0.1	0.2
Ammonia nitrogen	4,320	2,880	40	60

3. The discharge of an effluent in excess of the following limits after July 1, 1978, is prohibited:

<u>Discharge 001:</u> <u>Constituent</u>	<u>Discharge Rate</u>		<u>Concentration</u>	
	<u>(lbs/day)^{1/}</u>		<u>Limit</u>	
	<u>Maximum</u> <u>Daily</u>	<u>30-day</u> <u>Average</u>	<u>(mg/l)</u> <u>Average</u>	<u>Maximum</u>
Sulfides	7.2	7.2	--	0.1
Total chromium	0.72	0.36	0.005	0.001

4. Wastes discharged from Discharge Serial No. 003, shall be limited to ballast water and storm runoff only, as proposed.

^{1/} Based on a flow of 8.64 mgd.

^{2/} Not applicable during periods of stormwater discharge.

^{3/} In ml/l

5. The discharge of an effluent from Discharge Serial No. 003 in excess of the following limits is prohibited:

<u>Constituent</u>	<u>Discharge Rate</u> (lbs/day)		<u>Concentration</u> <u>Limit</u> (mg/l)	
	<u>Maximum</u> <u>Daily</u>	<u>30-day</u> <u>Average</u>	<u>Average</u>	<u>Maximum</u>
BOD ₅ 20°C	378	252	20	30
Suspended solids ^{2/}	945	630	50	75
Settleable solids ^{2/}	---	---	0.1 ^{3/}	0.2 ^{3/}
Phenols	2.52	1.26	0.1	0.2
Oil and grease	189	126	10	15
Sulfides	1.26	1.26	--	0.1

6. Waste discharged from Discharge Serial No. 002 shall be limited to single-pass, non-contact, saltwater cooling water only, as proposed.

7. The discharge of an effluent from Discharge Serial No. 002 in excess of the following limits is prohibited:

<u>Constituent</u>	<u>Concentration</u> <u>Limit</u> (mg/l)	
	<u>Average</u>	<u>Maximum</u>
Residual chlorine	--	0.5

The specific provisions in waste discharge requirements adopted by the Regional Board that Union Oil Company contends are

^{2/} Not applicable during periods of stormwater discharge.

^{3/} In ml/l

unreasonable or improper are as follows:

1. Paragraph B.2. and B.5. of Order No. 75-51 sets forth concentration limits for Biochemical Oxygen Demand (5 day) of 20 mg/l monthly average and 30 mg/l daily maximum for discharge 001 and 003.
2. Paragraph B.3. of the Order prohibits the discharge of total chromium in excess of 0.01 mg/l daily maximum and 0.005 mg/l monthly average for discharge 001.
3. Paragraph B.5. of the Order also prescribes concentration limits for phenols of 0.1 mg/l monthly average and 0.2 mg/l daily maximum for discharge 003.
4. The limitations stated in Paragraph B.5. of the Order are written in terms of both mass emission and concentration.
5. Standard Provision 11. of the Order does not relieve Union from the responsibility to comply with the specified discharge limitations:
 - (a) where any facility necessary for compliance with the requirements is partially inoperative as a result of a malfunction, breakdown or upset that is not within Union's reasonable control;
 - (b) during any period of emergency maintenance;
 - (c) where diversion or bypass of facilities necessary to maintain compliance with this permit is unavoidable to prevent severe injury, loss of life or severe property damage; or
 - (d) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the Order.

II. Contentions and Findings

1. Contention:

Effluent Limitation B.2. and B.5. limiting five-day Biochemical Oxygen Demand concentration to 20 mg/l average and 30 mg/l maximum are unattainable and unreasonable. Therefore, limitations on BOD₅ for Discharge 001 and 003 should be deleted.

Findings: The Water Quality Control Plan for Los Angeles Region includes the following objective for Los Angeles Harbor:

Dissolved oxygen shall not fall below 5.0 mg/l at any time as the result of waste discharges; when natural factors cause lesser concentrations, then controllable water quality factors shall not cause further reduction.

For that area known as the outer harbor area of Los Angeles-Long Beach Harbors, the mean annual dissolved oxygen concentrations shall be 6.0 mg/l or greater, provided that no single determination shall be less than 5.0 mg/l. When natural conditions cause lesser concentrations, then controllable water quality factors shall not cause further reduction.

Although, dissolved oxygen concentration in Los Angeles Inner Harbor is above 5.0 mg/l the majority of the time, recent data indicates that dissolved oxygen concentrations

lower than 5 mg/l occur occasionally. Depressed levels of dissolved oxygen in the Los Angeles Harbor are due to high mass loading of oxygen demanding waste rather than the concentration of oxygen demanding wastes in individual discharges.

We find that the effluent limitation prescribed by the Regional Board for total mass loading of BOD is sufficient and no appreciable benefit is gained in the receiving water by prescribing concentration limits for BOD for this discharge. However, due to the intermittent and highly variable nature of the discharge, the Regional Board should prescribe reasonable concentration limits for BOD or other parameters to ensure "efficient operation" of treatment as required by 40 CFR 124.45(f) and Section 2235.6(d), California Administrative Code. We suggest that the Regional Board should establish the aforesaid concentration limits based on data collected during the period when it is known to the Regional Board that the treatment plant was being operated efficiently. The Regional Board record does not establish whether the 20 mg/l average and 30 mg/l maximum standard included in Order No. 75-51 is appropriate for this purpose. Adjustment in the concentration limits may be necessary based upon operational data. If concentration limits are amended upward, the Regional Board must, of course, ensure that any change in mass emission rates corresponding to the revised concentration limits is consistent with receiving water objectives.

2. Contention:

Effluent Limitation B.3. limiting the discharge of total chromium in excess of 0.01 mg/l daily maximum and 0.005 mg/l monthly average from discharge 001 are unattainable, unreasonably restrictive, and arbitrary, therefore, they should be revised.

Findings: The chromium concentration limits prescribed by the Regional Board for this discharge are the same as those permitted by the Ocean Plan for discharges to the Pacific Ocean.

We realize that Union Oil Company discharges into the Los Angeles Inner Harbor which is not covered by the Ocean Plan, but to impose less restrictive limits would encourage discharge to the Los Angeles Harbor which is more vulnerable to adverse effects than the ocean due to its lower dilution capacity and lower flushing capability. Providing encouragement to discharge to such waters is contrary to the intent of the State and Regional Board.

The Regional Board's action in prescribing the same chromium concentration limit as that of the Ocean Plan was proper, however, the discharger should be given the same opportunity as given to ocean dischargers, to request an extension of the implementation date of Effluent Limitations 2.b. beyond the July 1, 1978 compliance date prescribed in Order No. 75-51, but not exceeding July 1, 1983, if the discharger can conclusively demonstrate that the treatment process required by Water Code Section 13379(a) to meet waste discharge requirements plus source control will not result in compliance with Effluent Limitation 2.b. by July 1, 1978. (See State Board Resolution No. 74-5).

The Ocean Plan requirements are presently being reviewed by the State Board. If such requirements are changed as a result of this review, the discharger may request the Regional Board to modify the requirements of the permit to reflect such changes.

3. Contention:

Effluent Limitation B.5. limiting phenol concentration to 0.1 mg/l monthly average and 0.2 mg/l daily maximum for discharge 003 is impractical and not necessarily attainable by the application of BPCTCA, therefore, it should be deleted.

Findings: The presence of phenol which is found to be acutely toxic to fish and aquatic life necessitates its regulation in the discharge. The Regional Board prescribed effluent concentration limits of 0.1 mg/l average and 0.2 mg/l maximum for phenols. These limits are five times more stringent than the limits found in Ocean Plan for phenol. We find no reason for prescribing such stringent limits, since acute toxic concentration of phenols have been shown to be from 5 to 25 mg/l for marine life. McKee and Wolf in Water Quality Criteria suggest that a receiving water (as opposed to effluent) concentration of 0.2 mg/l will not interfere with fish and aquatic life.

Although we find that the Regional Board's action was proper in prescribing effluent limits for phenol, it is believed that the limits prescribed are too stringent. Therefore,

the limits for phenol should be changed and effluent limitations of 0.5 mg/l average and 1.0 mg/l maximum should be prescribed for this discharge. (For similar rulings, see State Board Orders Nos. 76-13 [Shell Oil] and 77- [Mobil Oil adopted this same date].) These limitations are the same as those of the Ocean Plan. Consequently, they should have the same implementation date as that of the Ocean Plan.

4. Contention:

The limitations stated in Paragraph B.5. of the Order are written in terms of both mass and emission and concentration which is contrary to the provisions of Section 2235.5(b)(4), Title 23, California Administrative Code. Union suggests that the use of both sets of limitations does nothing to encourage the goal of water conservation. This dual system is unnecessary and concentration limits should be deleted.

Findings: While the wording in Section 2235.5(b)(4), Title 23, California Administrative Code could be construed to limit the Regional Board's authority by prescribing effluent limits in terms of mass emission rate (pounds per day), no such limitation was intended. The Regional Board, at its discretion, has the authority to prescribe effluent limitations in terms of concentrations in addition to mass emission rates (40 CFR 124.43). The State Board encourages water conservation and at such time as a discharger proposes a specific, reasonable water conservation program to the Regional Board the Board is directed to modify the concentration limits in its permits as appropriate to facilitate water conservation. (See also State Board Orders 77-18, 77-19, and 77-24, regarding the Texaco Wilmington Refinery, Texaco

Carson Sulfur Recovery Plant and Shell Oil Wilmington Refinery, respectively.)

In this case, however, of the 46.15 mgd total wastewater discharged by Union Oil Company, 36 mgd is single pass non-contact saltwater cooling water, 1.512 mgd is ballast water and stormwater runoff, and the remaining 8.64 mgd (Discharge 001) is, in part, process wastewater and, in part, cooling tower bleed-off, washdown wastes and boiler blowdown (see page 2 of this Order). Of these discharges, only water from Discharge 001 could be conserved. Further, in this case, process wastewater is required to be completely sewered after July 1, 1977, and the concentration limits will not apply. Therefore, water conservation is of limited applicability as an argument for removing concentration limits in this case.

5. Contention:

Standard Provision 11 of the Regional Board Order does not relieve the petitioner from the responsibility to comply with the specified requirements during periods of upset or breakdown as described at page 7, above.

Findings: This same contention was made to the State Board by Union Oil Company of California in its petition for review of San Francisco Regional Board Order No. 74-152 (NPDES Permit No. CA0005053) and by Texaco Incorporated in its petition for review of Los Angeles Regional Board Orders 75-90 (NPDES Permit No. CA0003778) and 75-24 (NPDES Permit No. CA0002020).

Our response to that contention is found in State Board Orders Numbers WQ 75-16, 77- , and 77- , wherein it is stated:

"We recognize that influent quality changes, equipment malfunctions, facilities start-up and shutdown, or other circumstances may sometimes result in the effluent exceeding permit limitations despite the exercise of reasonable care by petitioner. In these cases, the petitioner may come forward to demonstrate to the Regional Board that such circumstances exist. The Regional Board will consider these factors in exercising their (sic) descretionary authority in determining non-compliance and for enforcement purposes."

The Regional Board is not required to include a provision related to upsets, breakdowns, malfunctions of the treatment facility or treatment equipment in NPDES permits and did not err in adopting Order No. 75-22 without such provision or allowance.

III. Conclusions and Order

Having considered the contentions of the petitioner and the records of the Regional Board, we conclude that the action of the Regional Board in adoption of Order No. 75-51 was proper, however, the Regional Board should review the order and consider minor changes or modifications as follows:

1. The Regional Board should prescribe reasonable concentration limits for BOD or other parameters to ensure "efficient operation" of treatment facilities during all discharge periods.

2. The Regional Board's action of prescribing the same concentration limitations for chromium as specified in the Ocean Plan is proper since less stringent limitations than those of the Ocean Plan would encourage discharge to the Los Angeles Harbor over discharge to the ocean. However, the permit should be modified to give the same opportunity for extension of implementation date for chromium as given to ocean dischargers.
3. The Regional Board's action in prescribing concentration limitations for phenols was proper although the limitations as prescribed are unreasonably stringent and should be changed to match the limitations prescribed by the Ocean Plan. The implementation dates of Table B of the Ocean Plan should also apply to this pollutant.
4. The Regional Board acted within its authority in prescribing effluent limitations in terms of both mass emission rates and concentrations. Therefore, no change is recommended.
5. The Regional Board's action in not including upset provisions in its permit was appropriate and proper.

For the reasons heretofore expressed, IT IS HEREBY ORDERED, that the matter be referred back to the Regional Board for reconsideration and modifications as herein discussed.

Dated: *Sept 22, 1979*

LSI

John E. Bryson, Chairman

LSI

W. Don Maughan, Vice Chairman

LSI

W. W. Adams, Member